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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,727	02/11/2004	Su-Hyung Kim	5000-1-521	2806
33942	7590	12/31/2007		
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			EXAMINER CHRISS, ANDREW W	
			ART UNIT 2619	PAPER NUMBER
			MAIL DATE 12/31/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/776,727		KIM ET AL.	
	Examiner		Art Unit	
	Andrew Chriss		2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is too long. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Correction is required. See MPEP § 608.01(b).

Claim Objections

2. **Claims 7 and 8** objected to because of the following informalities:

Regarding Claim 7, claim language "...if it is determined that the data frame stored in the first buffer does exceed the low water" should read "...if it is determined that the data frame stored in the first buffer does exceed the low water *mark*" (emphasis added).

Regarding Claim 8, claim language "character data frame" should read "character data frames." Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claim 9** rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim language "...wherein the course of transferring the data frames stored in the second/and or third buffer, if the data frame in the first buffer does exceed the low water mark, then transferring the data..." is indefinite. As claimed in Claim 1, on which Claim 9 is dependent, data is not transferred from the second and third buffers unless it is determined that the data frame in the first buffer *does not* exceed the low water mark (emphasis added). Further, there is no claimed step of determining if the data frame in the first buffer exceeds the low water mark after the initial determination claimed in Claim 1.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 1 and 3-7** rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (AAPA) in view of McAlpine (United States Patent Application Publication US 2002/0141427 A1).

Regarding Claim 1, AAPA teaches a method for upstream traffic control in association with a plurality of buffers including at least a first, a second, and a third buffer in a conventional Ethernet-based passive optical network (Figure 3, page 6 of Applicant's specification). AAPA further teaches determining if there is a data frame to transfer in a first buffer (page 6, lines 18-24). However, AAPA may not teach a plurality of buffers with a predetermined transfer priority based upon a service characteristic or claimed method steps b) through e). In the same field of endeavor, McAlpine teaches a switch element with multiple output queues (Figure 8), each assigned a class and a set of watermarks (paragraph 0036). McAlpine further teaches a method of flow control wherein the head packet for each class queue compared with predetermined watermarks, such as the low watermark. After performing an optimization calculation, an arbiter device may select for transmission the class queue that receives the highest value and transmit the packets in the queue (paragraph 0047). As such, the optimization calculation taught in McAlpine discloses a method of examining data frames in multiple buffers against a low water mark, transferring a data frame if it is determined that the data frame in a buffer if it does not exceed a low water mark, and transferring data frames from multiple buffers if it is determined that the data frames do not exceed low water marks. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA in order to avoid

traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 3, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element (paragraph 0047). Thus, all of the data frames in a buffer may be transferred if the data frame stored in the first buffer exceeds a low water mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 4, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element (paragraph 0047). Thus, a data frame in a second buffer would be transmitted if the data frame exceeds a low water mark, while a data frame in a first buffer did not exceed a water mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 5, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to

claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element. The optimization calculation is performed for each of the classes in order to determine which packets to send next (paragraph 0047). Thus, data frames in a first and second buffer may be transferred if it is determined that a data frame in a first buffer exceeds a low water mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 6, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element (paragraph 0047). Thus, a data frame in a third buffer would be transferred if it is determined that a data frame in a first buffer does not exceed a low water mark and a data frame in a third buffer does exceed a low water mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA in order to avoid traffic congestion cause by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

Regarding Claim 7, McAlpine teaches an optimization calculation that orders data frame queues in a switching element for transfer based on watermarks, as described with regards to claim 1 above. Specifically, all data for a class that receives the highest value is then transmitted to a second switching element. The optimization calculation is performed for each of the classes

in order to determine which packets to send next (paragraph 0047). Thus, all data frames stored in a first buffer would be transferred, followed by the transfer of data frames in another buffer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the flow control method taught in McAlpine with the EPON upstream traffic control taught in AAPA in order to avoid traffic congestion caused by an excessive amount of data packets trying to utilize links within a multi-stage switch fabric.

4. **Claim 2** rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of McAlpine, as applied to claim 1 above, and further in view of King et al (United States Patent 6,314,106), hereinafter King. AAPA and McAlpine teach all of the limitations of Claim 1, as described above. McAlpine teaches an optimization algorithm, as described with regards to Claim 1 above, thus determining the status of a data frame to transfer in a queue. However, the references may not teach checking a data frame size referring to the low water mark and determining whether the transfer of data is to be effected. In the same field of endeavor, McAlpine teaches a receive port initiating a watermark check by checking the size of the received packet (column 6, lines 10-12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the packet size determination with the upstream data control taught in AAPA, as modified above, in order to efficiently use receive side processing resources and minimize transmit side congestion.

5. **Claim 8** rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of McAlpine, as applied to claim 1 above, and further in view of Feig et al (United States Patent Application Publication US 2002/0085713 A1), hereinafter Feig. AAPA and McAlpine teach all of the limitations of Claim 1, as described above. However, the references may not teach buffers

that store video, audio, or text data frames. In the same field of endeavor, Feig teaches a buffer that stores multimedia files, such as video, audio, and text (paragraph 0029). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the multimedia buffer taught in Feig with the upstream data control taught in AAPA, as modified above, in order to deliver a media file to a cache local to a user, but not accessible until the deliverer or copyright owner authorizes access to or playback of the media file.

6. **Claim 9** rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of McAlpine, as applied to claim 1 above, and further in view of Osborne (United States Patent 6,032,179). AAPA and McAlpine teach all of the limitations of Claim 1, as described above. However, the references may not teach generating an interrupt based on comparison of a data frame in a buffer to a low water mark. In the same field of endeavor, Osborne teaches generating interrupts based on watermark levels in a queue (column 8, lines 22-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the transfer interrupt taught in Osborne with the upstream data control taught in AAPA, as modified above, in order to allow virtual circuits to decide which queue should be used for selecting buffers.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Haran et al (United States Patent Application Publication US 2005/0249498 A1) is directed to flow control in an Ethernet passive optical network.

b. Galbi et al (United States Patent Application Publication US 2002/0051460 A1) is directed to resource reservation using watermarking.

c. Wellen (United States Patent Application Publication US 2002/0075884 A1) is directed to a distributed scheduler for packet switches in a passive optical network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Chriss whose telephone number is 571-272-1774. The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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